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10/626,562	07/25/2003	Tatsuya Sato	116690	9336

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/626,562	SATO, TATSUYA	
	Examiner	Art Unit	
	Jamares Washington	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 November 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's amendments and response received on November 20, 2007 have been entered. Claims 1-20 are presently pending. The amendments and response are addressed hereinbelow.

Specification

In light of the amended abstract, examiner withdraws previous objection to the specification.

1. The abstract of the disclosure is objected to because line 5, which reads "...**generated** a value for...", should read "...**generate** a value for...". Correction is required. See MPEP § 608.01(b).

Claim Objections

The newly amended claims are in compliance with 37 CFR 1.52(b); examiner withdraws previous objection in light of the amended claims.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4 and 11-14 are rejected under 35 U.S.C. 102(e) as being anticipated by John Charles Dalrymple et al (US 2003/0072016 A1).

Regarding claim 1, Dalrymple et al discloses a method of generating color data ("A method of color conversion" at ¶ [36]) for image formation in a color image forming device ("This invention is in the field of color conversion for digital imagery, and

pertains specifically to a method of converting RGB input signals into printer CMYK signals..." at ¶ [2]) by converting data of color values for three colors of cyan, magenta, and yellow, representing a color image to be formed (Fig. 5 numeral 36 input CMY values), into data of color values for four colors of cyan, magenta, yellow, and black (Fig. 5 numeral 40 output values of CMYK), the method comprising:

preparing a plurality of black data generating tables which have different black data conversion characteristics from one another ("There are three UCR curves: C, dash-double dot; M, dashed; and Y, dash-dot, respectively. Usually, the curves slightly differ from each other by design, to achieve visually neutral rendering of colors..." at ¶ [65] and "The parameters for this processing block are seven sets of 1-D CMYK LUTs...C to black, M to black, Y to black, R to black, G to black, and B to black, respectively" at ¶ [81].);

receiving a set of color data including color values for three colors of cyan, magenta, and yellow (Fig. 5 numeral 36, input CMY values);

extracting a minimum value among the three color values in the received set of color data ("These curves are easily implemented as 1-D LUTs, and the index into the LUTs is the minimum of the input C, M, and Y signals" at ¶ [65]);

selecting a black data generating table dependently on color of the extracted minimum value (Fig. 5 numeral 50 CMYK LUT selector. Depicted from numeral the sorter 48, the smallest of the CMYK values is selected to determine the lookup table (as explained in paragraph [82]); and

generating a value for black using the selected black data generating table and based on the extracted minimum value ("Black Generation" as described in ¶ [81].

Regarding claim 2, Dalrymple et al discloses a method according to Claim 1, further comprising the step of correcting the color values for cyan, magenta, and yellow in the received color data set by subtracting the generated value for black from the three values for cyan, magenta, and yellow, respectively (Eq. 3 explained by ¶ [68]).

Regarding claim 3, Dalrymple et al discloses a method according to Claim 1, wherein the plurality of black data generating tables include three different tables, each having a one-on-one correspondence with one of cyan, magenta, and yellow (Fig. 5 CMYK LUTs C to Black, M to Black, and Y to Black).

Regarding claim 4, Dalrymple et al discloses a method according to Claim 3, wherein each of the three black data generating tables is configured to allow the value for black to increase as the value of a corresponding color value increases (Fig. 2 (b) shows as each C, M, Y color increases along the y-axis, the K value increases along the x-axis) and to allow the rate of change for the Value for black to decrease as the value of the corresponding color value approaches a predetermined maximum. (Fig. 2(b) as the CMY colors reach their individual max, the K value slows its increase towards 100% along the x-axis).

Regarding claim 11, Dalrymple et al discloses a color data generating device (Fig. 5 numeral 38 conversion module), provided in a color image forming device ("In the method of the invention as used for printing" at ¶ [77]), for generating color data for

image formation by converting data of color values for three colors of cyan, magenta, and yellow, representing a color image to be formed (Fig. 5 numeral 36 input CMY values), into data of color values for four colors of cyan, magenta, yellow, and black (Fig. 5 numeral 40 output values of CMYK), the device comprising:

a table storage portion storing a plurality of black data generating tables which have different black data conversion characteristics from one another (Fig. 5 numeral 52);

an input portion receiving a set of color data including color values for three colors of cyan, magenta, and yellow (Fig. 5 numeral 36);

an extracting portion extracting a minimum value among the three color values in the received set of color data (Fig. 5 numeral 48);

a table selecting portion selecting a black data generating table dependently on color of the extracted minimum value (Fig. 5 numeral 50); and

a black generating portion generating a value for black using the selected black data generating table and based on the extracted minimum value (Fig. 5 numeral 56).

Regarding claim 12, Dalrymple et al discloses a color data generating device according to Claim 11, further comprising a correcting portion correcting the color values for cyan, magenta, and yellow in the received color data set by subtracting the generated value for black from the three values for cyan, magenta, and yellow, respectively (Eq. 3 explained by ¶ [68]. There must exist a correcting portion within the device to carry out the functionality).

Regarding claim 13, Dalrymple et al discloses a color data generating device according to Claim 11, wherein the plurality of black data generating tables include three different tables, each having a one-on-one correspondence with one of cyan, magenta, and yellow (Fig. 5 CMYK LUTs C to Black, M to Black, and Y to Black).

Regarding claim 14, Dalrymple et al discloses a color data generating device according to Claim 13, wherein each of the three black data generating tables is configured to allow the value for black to increase as the value of a corresponding color value increases (Fig. 2 (b) shows as each C, M, Y color increases along the y-axis, the K value increases along the x-axis) and to allow the rate of change for the value for black to decrease as the value of the corresponding color value approaches a predetermined maximum. (Fig. 2(b) as the CMY colors reach their individual max, the K value slows its increase towards 100% along the x-axis).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5, 6, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over John Charles Dalrymple et al (US 2003/0072016 A1).

Regarding claim 5, Dalrymple et al discloses a method according to Claim 1, wherein the black data generating tables include two tables associated with cyan and yellow (Fig. 2(a) plotting the cyan curve and yellow curve).

Dalrymple is silent on the table selecting process selects one of the two tables when the extracted minimum value is for magenta.

However, as shown in Fig. 2 (a), in the under color removal method, yellow colorant is removed the most when generating black and would therefore most likely have the next minimum value in the image data. This suggests if magenta were the minimum value of the three colorants when generating black, then yellow would be the next minimum because magenta has the greatest influence on the brightness of an image. Magenta being the minimum value suggests the brightness of the pixel is very low and higher in density giving a pixel value closer to the true black colorant by using a lesser amount of yellow.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the black-generation table for yellow when the extracted minimum value is for magenta to the method of black-generation using lookup tables for each colorant because yellow is removed the most as the colorants approach the true black colorant and would be likely to have the next minimum value.

Regarding claim 6, Dalrymple et al discloses a method according to Claim 5, further comprising a step of previously determining one of the two tables that is to be selected for magenta (see rejection of claim 5 where the yellow table is predetermined as the table to select).

Regarding claim 15, Dalrymple et al discloses a color data generating device according to Claim 11, wherein the black data generating tables include two tables associated with cyan and yellow, and the table selecting portion selects one of the two tables when the extracted minimum value is for magenta (see rejection of claim 5 above).

Regarding claim 16, Dalrymple et al discloses a color data generating device according to Claim 15, further comprising a memory previously set with data indicative of one of the two tables that is to be selected for magenta by the table selecting portion (The apparatus is computer software implemented suggesting there must exist a memory with instructions to carry out the method as rejected in claim 6).

2. Claims 7-10 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over John Charles Dalrymple et al (US 2003/0072016 A1) in view of Kenji Fukasawa (US 6466332 B1).

Regarding claim 7, Dalrymple et al discloses a method as rejected in claim 1 above. Dalrymple fails to disclose or suggest wherein one of the plurality of black data generating tables is a first table configured to allow the black data generating step to generate a value or zero for black when the value &the corresponding color is less than or equal to a first prescribed limit value.

Fukasawa, in the same field of endeavor, teaches a first table configured to allow the black data generating step to generate a value or zero for black ("... in case where the

generation ration BGR becomes the maximum [1] when the index of brightness LS is the same as or below the threshold value E as well as the BGR becomes the minimum [0] when the LS is the same as or above the threshold value S" at column 9 line 59, Fukasawa) when the value of the corresponding color is less than or equal to a first prescribed limit value (As the index of brightness for the respective colors increases, the value of black generated decreases -"...it should be noted that the basic precondition may be maintained, this precondition being such that the brighter the data before conversion becomes, the more the generation amount of K (Kout) decreases" at column 10 line 20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made incorporate the teachings of Fukasawa where a first table determines whether to generate a value or zero for black when a corresponding color is less than or equal to a first prescribed limit value into the method as disclosed by Dalrymple in which black generation tables are created for converting CMY values into CMYK values to compensate for the brightness of the output image. The black generation ratio is only utilized to finally realize the effect such that the brighter the data before conversion becomes, the more the generation amount of [black] decreases to output a visually pleasing image.

Regarding claim 8, Dalrymple et al discloses a method according to Claim 7, wherein another one of the plurality of black data generating tables is a second table configured to allow the black data generating step to generate a value or zero for black when the value of the corresponding color is less than or equal to a second prescribed value that is smaller than the first prescribed limit value (As rejected in claim 7 above for

one of the other black generation tables which is a color of lighter tint than the previous table. Each of the tables have different characteristics, therefore the prescribed limit values adjust according to the table used).

Regarding claim 9, Dalrymple et al discloses a method according to Claim 7, wherein the first table is a black data generating table for cyan (Fig. 2(b) - "C" curve) that is selected when the extracted minimum value is for cyan (Fig. 5 numeral 50 CMYK LUT selector. Depicted from numeral the sorter 48, the smallest of the CMYK values is selected to determine the lookup table (as explained in paragraph [82]).

Regarding claim 10, Dalrymple et al discloses a method according to Claim 8, wherein the second table is a black data generating table for yellow (Fig. 2(b) - "Y" curve) that is selected when the extracted minimum value is for yellow (Fig. 5 numeral 50 CMYK LUT selector. Depicted from numeral the sorter 48, the smallest of the CMYK values is selected to determine the lookup table (as explained in paragraph [82]).
Regarding claim 17, Dalrymple et al discloses a color generating device according to Claim 11, wherein one of the plurality of black data generating tables is a first table configured to allow the black data generating portion to generate a value or zero for black when the value of the corresponding color is less than or equal to a first prescribed limit value (see rejection of claim 7 above).

Regarding claim 18, Dalrymple et al discloses a color data generating device according to Claim 17, wherein another one of the plurality of black data generating

tables is a second table configured to allow the black data generating portion to generate a value or zero for black when the value of the corresponding color is less than or equal to a second prescribed value that is smaller than the first prescribed limit value (see rejection of claim 8 above).

Regarding claim 19, Dalrymple et al discloses a color data generating device according to Claim 17, wherein the first table is a black data generating table for cyan that is selected by the table selecting portion when the extracted minimum value is for cyan (see rejection of claim 9 above).

Regarding claim 20, Dalrymple et al discloses a color data generating device according to claim 18, wherein the second table is a black data generating table for yellow that is selected by the table selecting portion when the extracted minimum value is for yellow (see rejection of claim 10 above).

Response to Arguments

5. Applicant's arguments filed November 20, 2007 have been fully considered but they are not persuasive.

Applicant's remark: Regarding the remark that Dalrymple fails to disclose or suggest the features of the pending claims because it does not teach "selecting a black data

generating table dependently on color of the extracted table," where the black data generating tables "have different black data conversion characteristics from one another," as recited in independent claim 1. As shown therein, the output for black (Ko) is equal to BG (Ki) where Ki is the minimum value of C, M or Y. In contrast to the features of claim 1, paragraph [0066] in Dalrymple indicates that the output black value is independent from the color of the minimum value. For example, Ko will be the same regardless of the specific color of the minimum value component.

Examiner's response: The system implemented by Dalrymple clearly shows "selecting a black data generating table dependently on color of the extracted minimum" in Fig. 5 following the schematic from numeral 48-50 as explained in the previous Office Action dated August 20, 2007. As stated in ¶ [82] "The signal V in FIG. 5 represents the ordering information. Subscripts "l," "m," and "s" indicate the largest, middle, and smallest of the input CMY signal components, respectively, thus $V_l \geq V_m \geq Vs$." Fig. 5 shows the Vs signal, which would be the "smallest value" out of the C, M, and Y signals to determine which LUT will be chosen in step 50. The black data conversion characteristics are shown to be different in Fig. 2(a). There is only one curve for black generation (BG) shown in Fig. 2(a) because the graph explains a user attempting to obtain the same value for black depending on the UCR of C, M, or Y. Therefore, applicant arguing that the black generated is the same is irrelevant. The **conversion characteristics** to obtain a particular shade of black is what is claimed to be different which is clearly explained in ¶ [65] with the three UCR curves represented wherein each

UCR curve can be individually represented as a 1-D LUT and the index into the LUTs is the minimum of the input C, M, and Y signals. This means representing each of C, M, and Y curve with the black generation curve become individual black data generation look up tables. If the conversion characteristics were the same, the UCR curves would be the same, which is not the case.

Applicant's remark: Additionally, in paragraphs [0081] and [0082] cited in the Office Action, Dalrymple indicates that multiple look-up tables (LUTs) can be consulted for determining CMYK printer signals. However, here also, Dalrymple does not suggest that specific LUTs are selected dependent on the color of the extracted minimum value of the input C, M, Y signal.

Examiner's response: Specific LUTs are selected (Fig. 5 step 50) as previously rejected; dependent on the color of the extracted minimum value of the input C, M, Y signal (as described in ¶ [82] wherein the input CMY components are sorted, and the color with the least value is used to select the LUT.

Applicant's remark: During the interview, the Examiner argued that Dalrymple discloses black data generating tables having different black data conversion characteristics because Figs. 2(a)-2(d) represent black data tables where the input is different because Ki is different. Based on this, the Examiner asserted that Dalrymple discloses a plurality of black data generating tables having different black data conversion characteristics from each other. Applicant submits that this is an

unreasonable interpretation of the claim language which requires not only the presence of a plurality of tables, but also that the tables have "different black data conversion characteristics." As discussed above, each of the tables disclosed in Dalrymple teach to output the same amount of black based on the value of the input, i.e., the curvature of K is identical in all of the tables. Thus, the black data conversion value is the same regardless of the table that is selected in Figs. 2(a)-2(d).

Examiner's response: The black data generating tables which have different black data **conversion characteristics** from one another as recited above are indicated by Fig. 2(a) wherein each UCR curve has differing conversion characteristics from one another to generate the same shade of black. Fig. 5 numeral 52 indicates the plurality of black generation conversion tables (C to Black, M to Black, and Y to Black, etc.) The claim language calls for the conversion characteristics used to obtain a certain shade of black to be different according to the minimum color extracted and not the amount of black input to create a certain output shade of black. The reference clearly explains the output black depends upon the black generated multiplied by the input black which is selected from the LUT of the minimum of C, M, or Y. Eqs. 2 and 3 ¶ [65].

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jamares Washington whose telephone number is (571) 270-1585. The examiner can normally be reached on Monday thru Friday: 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on (571) 272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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JW

January 23, 2008

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